

Questions for discussion 2

The answers to these questions may be found in the reading, but occasional outside references may be needed. These questions are due Tuesday, April 18, in class.

1. On page 33, the text states that “the most common invertebrate shells are composed of the minerals calcite or aragonite (both are calcium carbonate, CaCO_3).” If they’re both made of the same atoms, how come there are two mineral names for the same chemical substance? Hint: you can’t blame history for this one.

b. A couple of lines below that, in the description of a chitinophosphatic shell, the text makes a big error, which is annoying for something that you’ve just shelled out a lot of money for. First, chitin is described as “a complex molecule” — specifically, what **type** of biologically-interesting molecule is it? Second, and this is the error, find the **correct** chemical formula for the mineral apatite.

2. What does the text suggest on page 34 is a prerequisite for **fossilization** of an organism? Then how do **birds and flying insects** ever get fossilized? Hint: for the second question, you’ll need to look at an outside reference. One site I found is the UC Berkeley Museum of Paleontology, <http://www.ucmp.berkeley.edu/mesozoic/jurassic/solnhofen.html>.

3. On page 56, what is the problem with Rene Descartes’ idea that the planets were “pulled off” the Sun during planetary formation in the solar system? What is the evidence that the “other” idea (first elucidated by Immanuel Kant and Pierre-Simon LaPlace) works better?

4. Name **four** pieces of evidence in favor of continental drift. What was ultimately the reason that many earth scientists did not accept continental drift as a valid theory of continental motion?

5. Apparently, there have many assemblings and re-assemblings of a supercontinent on Earth. Name the **last three supercontinents** in order from oldest to youngest, and give their **dates** of existence (millions of years ago will do). Hint: This is not found in the text. Give a **citation** to where you found this information.

6. Fill in the table:

| Type of plate boundary | Geography (i.e., mountains, trench, etc). | Earthquakes? (many / few / none) (shallow / deep) | Volcanoes? (yes / no) (explosive / effusive) | Name a place where such a boundary is |
|------------------------|---|---|--|---------------------------------------|
| Convergent | | | | |
| Divergent | | | | |
| Transform | | | | |

7. Name **two geographic ways** in which a **continent-continent** convergent boundary differs from an **ocean-continent** convergent boundary. Then give a reason that explains why they differ.

8. Currently, the North American Plate consists of the North American continent and the west half of the Atlantic Ocean seafloor. What will eventually happen to the North American Plate? Then what will eventually happen to the east coast of the US (what kind of plate boundary)?